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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,486	03/04/2005	Akimitsu Hatta	047297-0143	1871

22428 7590 10/26/2007  
FOLEY AND LARDNER LLP  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER
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SONG, MATTHEW J

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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10/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/526,486	<b>Applicant(s)</b> HATTA ET AL.	
	<b>Examiner</b> Matthew J. Song	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 August 2007.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 5-7 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☒ Claim(s) 5-7 is/are allowed.  
 6) ☒ Claim(s) 1 and 2 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see page 4-5 of the remarks, filed 8/7/2007, with respect to the 35 U.S.C. 112 first paragraph have been fully considered and are persuasive. The rejection of claims 1-10 has been withdrawn.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanechika et al (US 2004/0079962 A1) in view of in view of Doris et al (US 5,383,354).

Kanechika et al teaches a silicon crystal needle has an appropriate size, such as a diameter of about several nm at the leading and a height of about 5 to 10  $\mu\text{m}$  ([0052]). Kanechika et al specifically discloses a truncated cone 160 having a radius of curvature of several nm to ten or more nm and becomes a sharp conic shape having a height of several  $\mu\text{m}$  with a diameter near the bottom of about 0.5  $\mu\text{m}$  ([0144]), this reads on applicant's acicular silicon crystal having a radius of curvature not less than 1 nm to no more than 20 nm at its tip end and having a diameter of bottom surface not less than 10 nm and a height more than the diameter of the bottom surface.

Kanechika et al discloses all of the limitations of claim 1, except the surface is coated with a thin carbon film. Kanechika et al teaches a cone can be used as a probe of a scanning type microscope (Abstract).

In a method of making a probe from silicon crystal, note entire reference, Doris et al teaches a silicon probe is coated with a layer of carbon to protect the probe and specimen during scanning (col 3, ln 35-65 and col 4, ln 30-50).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Kanechika et al's probe by coating with carbon, as taught Doris et al to protect the probe and specimen during scanning.

Referring to claim 2, the combination of Kanechika et al and Doris et al teaches a height of several  $\mu\text{m}$  and a bottom diameter of 0.5  $\mu\text{m}$  ([0144]).

***Allowable Subject Matter***

4. Claims 5-7 are allowed.

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5. The following is an examiner's statement of reasons for allowance: The closest prior art is Awano (US 2002/0163079 A1). Awano et al teaches a method of growing a carbon nanotube on an n-type silicon substrate comprising sputtering a catalyst of iron on a substrate, and growing a carbon nanotube by plasma CVD using methane and a hydrogen gas ([0076], [0096] and [0130]). Awano et al does not teach, suggest or provide any rationale for the claimed sputtering of catalytic metal micro particles by applying a direct-current voltage to a silicon substrate and supplying hydrocarbon gas to form acicular silicon crystals with surfaces coated with a thin carbon film.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

6. Applicant's arguments filed 8/7/2007 have been fully considered but they are not persuasive. Applicant's arguments regarding claim 1 are noted but not found persuasive. The method limitations of sputtering metal micro particles are not recited in the product limitations of claim 1 (page 7 of the remarks). The combination of Kanechika et al and Doris et al teach all of the product limitations of claim 1, as discussed previously. Furthermore, Doris et al teaches a silicon probe is coated with a layer of carbon to protect the probe and specimen during scanning (col 3, ln 35-65 and col 4, ln 30-50), which is clearly motivation why one of ordinary skill in the art at the time of the invention would modify the acicular silicon probe taught by Kanechika et al.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song  
Examiner  
Art Unit 1792

MJS  
October 23, 2007

*/Robert Kunemund/  
Robert Kunemund  
Primary Examiner  
TC 1700*